AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims

1. (Currently Amended) A magnetic separator for separating magnetic particles from a non-magnetic fluid, wherein the magnetic separator comprises: a separation chamber having an interior wall, an exterior wall, a top portion, a bottom portion, and an elongate portion defined between the top and bottom portion; a magnet having a first pole and a second pole positioned adjacent to the exterior wall of the separation chamber and with no magnetic elements built inside said separation chamber, wherein the first pole is substantially diametrically opposed to the second pole; a first inlet port directed into the top portion of the separation chamber, ~~wherein the first inlet port is positioned adjacent to one of the first and second poles,~~ wherein the first inlet port is adapted to transfer a mixture into the separation chamber wherein said inlet port comprises at least one inlet pipe within said separation chamber, said inlet pipe being positioned adjacent the top of the separation chamber and adapted to sweep the mixture downward along the interior wall toward the bottom portion of the separation chamber; an underflow port in communication with the bottom portion of the separation chamber, wherein the underflow port is adapted to receive the magnetic particles; and an overflow port at the top of the separation chamber and in communication with the separation chamber, wherein the overflow port is adapted to receive the non-magnetic fluid.

2. (Previously Presented) The magnetic separator of claim 1, wherein the separation chamber is one of substantially elongate cylindrical shape and substantially parallelepipedal shape.

3. (Currently Amended) The magnetic separator of claim 2, wherein the top and bottom portions of the separation chamber extend beyond the magnet and wherein the first and second poles are positioned to direct lines of a magnetic field substantially perpendicular to the separation chamber.

4. (Previously Presented) The magnetic separator of claim 2, wherein a cross section of the top portion of the separation chamber is greater than a cross section of the elongate portion.

5. (Previously Presented) The magnetic separator of claim 4, wherein the cross section of the elongate portion is greater than a cross section of the bottom portion.

6. (Previously Presented) The magnetic separator of claim 1, wherein the overflow port is in communication with the top portion of the separation chamber.

7. (Previously Presented) The magnetic separator of claim 1, wherein the diameter of the overflow port is configured to restrict a rate of flow through the overflow port to be less than a rate of flow through the underflow port.

8. (Previously Presented) The magnetic separator of claim 1, further comprising one of a valve and flow restrictor configured to restrict a rate of flow through the underflow port.

9. (Previously Presented) The magnetic separator of claim 1, further comprising one of a valve and flow restrictor configured to restrict a rate of flow through the overflow port.

10. (Previously Presented) The magnetic separator of claim 1, wherein the magnet is one of a permanent magnet, an electromagnet, and a superconducting magnet.

11. (Canceled).

12. (Previously Presented) The magnetic separator of claim 11, wherein the first and second poles are north and south poles, respectively, and wherein the north pole includes a top portion and a lower portion and the south pole includes a top portion and a lower portion.

13. (Previously Presented) The magnetic separator of claim 12, wherein the lower portion of the separation chamber extends beyond the lower portion of the north and south poles, and wherein the upper portion of the separation chamber extends beyond the upper portion of the north and south poles.

14. (Previously Presented) The magnetic separator of claim 12, wherein bottom portions of the first and second poles are tapered, whereby the magnetic field is weaker near the bottom portion of the separation chamber in relation to the magnetic field strength near the elongate portion of the separation chamber.

15. (Previously Presented) The magnetic separator of claim 1, further comprising a pump in communication with the first inlet port.

16. (Previously Presented) The magnetic separator of claim 1, further comprising a pump in communication with the underflow port.

17. (Previously Presented) The magnetic separator of claim 1, further comprising a second inlet port, wherein the second inlet port is directed into the top portion of the separation chamber, wherein the second inlet port is positioned adjacent to one of the first and second poles, and wherein the second inlet port is adapted to transfer the mixture into the separation chamber.

18. (Previously Presented) The magnetic separator of claim 1, wherein the magnetic separator is connected to a Fischer-Tropsch reactor external to the magnetic separator.

19. (Previously Presented) The magnetic separator of claim 1, wherein the magnetic separator is connected to a Fischer-Tropsch reactor, wherein the magnetic separator is situated within the reactor.

20. (Previously Presented) The magnetic separator of claim 1, wherein the mixture is comprised of magnetic particles and a non-magnetic fluid.

21. (Previously Presented) The magnetic separator of claim 20, wherein the mixture further comprises one of paramagnetic particles and iron, cobalt, and nickel and compounds thereof.

22. (Previously Presented) The magnetic separator of claim 17, wherein the depth of the first inlet port and the second inlet port is adjustable in relation to the top portion of the separation chamber.

23. (Previously Presented) A method of separating magnetic particles from non-magnetic fluid comprising the steps of: directing flow of a mixture through an inlet port into a substantially vertically oriented separation chamber, wherein the mixture is comprised of a plurality of magnetic particles in a non-magnetic fluid, and wherein the separation chamber includes an interior wall, an exterior wall, a top portion, a bottom portion, and an elongate portion defined between the top and bottom portion; directing lines of a magnetic field in a substantially transverse direction in relation to the separation chamber; receiving a portion of the plurality of magnetic particles through an underflow port in communication with the bottom portion of the separation chamber; and receiving a portion of the non-magnetic fluid through an overflow port in communication with the upper portion of the separation chamber.

24. (Currently Amended) The method of claim 23, further comprising the steps of: magnetizing the plurality of magnetic particles, whereby the magnetic particles agglomerate in the magnetic field~~; and attracting the plurality of magnetic particles toward the interior wall of the separation chamber~~.

25. (Currently Amended) The method of claim 24, further comprising the step of directing the flow from the inlet port to sweep the agglomerated particles downward ~~along the interior wall~~ toward the bottom portion of the separation chamber.

26. (Previously Presented) The method of claim 25, further comprising a pump in communication with at least one of the inlet port and the underflow port.

27. (Previously Presented) The method of claim 25, further comprising one of a valve and flow restrictor configured to restrict a rate of flow through at least one of the underflow port and the overflow port.

28. (Previously Presented) The method of claim 25, further comprising at least one or more of the following steps: adjusting the elevation of the inlet port; adjusting the cross-sectional area of an inlet line connected to the inlet port; adjusting the cross-sectional area of an outlet line connected to the outlet port; adjusting the strength of the magnetic field in relation to the length of the poles; and modifying the length of the separation chamber.